
New testing procedure examines building operating systems

You have just spent \$10 million to construct a new building, but after you sign for final possession an unsettling thought crosses your mind: "This building has thousands of feet of wiring, electrical, data and telephone lines, complex electronic and duct work systems for heating and cooling, plus sophisticated fire and security alarm systems, and indoor and outdoor lighting systems. Will everything work like it's supposed to?"

That is exactly what Building Commissioning - commonly called Cx - is designed to answer. Cx indicates that a trained commissioning agent (usually an engineer) puts the building's systems through an extensive set of tests to see just how they will work under normal operating conditions. Putting them through the operational wringer before the owner takes possession means any faults or problems can be detected and fixed before the owner signs on the dotted line.

"The result is reduced warranty issues, fewer comfort problems, reduced operating costs, documented maintenance requirements, improved staff training and peace of mind for the new owner," says Pat Gleason, energy specialist with the Energy Division.

"Although Building Cx has been used extensively around the country, it is relatively new in Idaho," Gleason adds. "Still, its value is already being recognized. For example, the Idaho Division of Public Works now requires that Cx be a part of the construction process for all new state buildings that cost more than \$5 million or are deemed sufficiently complicated to warrant commissioning."

The term "commissioning" was coined by the U.S. Navy to describe a process for insuring that new ships are fully operational before setting to sea.

Commissioning for buildings simply means that all systems are functioning as intended in the design. For example, thermostats properly control heating, cooling and ventilation, and airflow is balanced throughout a building. Com-

missioning performed on new and existing buildings can pay for itself not only in energy savings, but also in worker productivity.

We now spend an average of 90 percent of our lives inside buildings. Healthy buildings are important to our health and to our productivity.



Paul Johnson (left), with CH2M Hill Engineering, and Ada County Commissioner Roger Simmons check the progress of the Ada County municipal complex being constructed on Front Street in Boise. Johnson will oversee the Building Cx on the new county building, which should be ready for occupancy by January 2002. (Photo by Linda Cawley)

Current projects

Other government agencies in the Northwest such as Ada County, Boise State University, Montana State University, and the Montana Architecture and Engineering Division are now making Building Cx a standard part of the new construction process.

Two new Building Cx projects are underway in Boise. The new recreation building at Boise State University will be commissioned as a demonstration project. Keithly-Welsh, a commissioning firm from Washington, has been chosen as the Cx authority for the project. CH2M Hill Engineering is also conducting a commissioning demonstration project involving the construction of the new Ada County municipal complex.

Toombs and Associates, a Cx firm with offices in Colorado and Washington, is under contract with the DPW to provide consultation throughout the Cx project. They also worked on the Cx guidelines for new buildings and are developing guidelines for Cx existing buildings.

Looking back for the answers

While Building Cx is particularly effective in new construction, it can also be very valuable in taking a thorough second look at existing buildings using a process called Retro Cx or RxCx. An existing building with problems in its operational systems and ventilation, for example, can actually directly cause major indoor air quality problems for building operations and tenants.

If people are experiencing any of the following problems or complaints in your building, Retro Cx might well help provide you with answers and solutions.

- Employee absenteeism
- Reduced productivity in the work force
- High tenant turnover
- High maintenance and energy costs
- Poor indoor air quality
- Poor occupant comfort

Financial assistance

The Energy Division has incorporated Building Cx into its energy conservation loan program. Loans for commissioning heating, ventilating and air conditioning systems and their controls are now available up to \$100,000 at 4 percent interest. The funds are available for new or existing buildings. For more information about the loan program call the Idaho Energy Hotline at **1-800-334-SAVE** and ask for Terry Hoebelheinrich.

The Northwest Energy Efficiency Alliance (NEEA) provides funding for the development of Cx guidelines and projects in Idaho. The guidelines for Cx new buildings have been developed and are available at the Department of Public Works web site (see sidebar).

NEEA is a non-profit group of electric utilities, state governments, public interest groups and industry representatives committed to bringing affordable, energy-efficient products and services to the marketplace. Idaho Power Company is the primary funder for the NEEA projects in Idaho.

For more information about the Cx projects in Idaho, contact Mike Purcell by calling (208) 327-7977 or by email at mpurcell@idwr.state.id.us.

Web sites provide additional information

Several web sites address various Building Commissioning topics. For additional information about Cx you may want to visit these web sites:

<http://www.idwr.state.id.us/energy/Cx.htm>

[http://www.idwr.state.id.us/energy/Whatv2\(generic\)/sld001.htm](http://www.idwr.state.id.us/energy/Whatv2(generic)/sld001.htm)

<http://www.betterbricks.com/healthy.asp>

Department of Public Works web site under Instructions to Architects and Engineers at the bottom of that page. The address is:

<http://www2.state.id.us/adm/pubworks/archengr/commgl97.htm>.

For more information about the health effects of sick buildings visit:

<http://www.idwr.state.id.us/energy/IAQ%20Checklist.htm>

To view the Idaho Guidelines for Cx new buildings:

<http://www2.state.id.us/adm/pubworks/archengr/commgl97.htm>

To see what Montana is doing in Cx:

<http://www.deq.state.mt.us/ppa/tfa/energy/buildings.htm>

To see what Oregon is doing in Cx:

<http://www.energy.state.or.us/bus/comm/bldgcx.htm>